

CLAIMS

What is claimed is:

- 1) A computer system operation method for use in a system comprised of a plurality of workstations arranged in a peer-to-peer architecture, said method providing a means for allowing multiple users simultaneously to modify a model of an object at separate workstations, such that any modification made at any workstation is duplicated at each other workstation in the system, the method comprising: receiving at a first workstation input from a user specifying a modification of a model; translating said input into a command specifying the portion of the model to be modified, and the modification to be made; modifying said model at said first workstation in accordance with said command; transmitting said command via a network to other workstations in the system; processing said command at a second workstation; and modifying said model at said second workstation in accordance with said command.
- 2) The computer system operation method of Claim 1, wherein said plurality of workstations each run applications comprising a distributor component, a feature modeler, and a geometric modeler.
- 3) The computer system operation method of Claim 1, wherein said plurality of workstations each run applications comprising a distributor component, and a feature modeler.
- 4) The computer system operation method of Claim 2, wherein said distributor component, feature modeler, and geometric modeler on each of said plurality of workstations are the same.

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- 5) The computer system operation method of Claim 4, wherein said geometric modeler on each of said plurality of workstations employs persistent generic naming.
- 6) The computer system operation method of Claim 1, wherein said input comprises one or more constraints relating to cell information, said method further comprising:  
for each constraint, determining which cells of the model meet the requirement of the constraint; and  
generating a list of cells meeting all of the requirements of the constraints.
- 7) The computer system operation method of Claim 6, wherein the constraints are chosen from a group comprising:
- a) constraints relating to cell dimension;
  - b) constraints relating to the topology of a cell;
  - c) constraints relating to the history of the model evolution;
  - d) constraints relating to specific attributes of a cell; and
  - e) constraints relating to geometrical indications of a cell.
- 8) A CAD/CAM device comprising:  
an input device;  
a central processing unit; and  
a display device;  
wherein the central processing unit runs an application program comprising code for:  
displaying a representation of a model;  
receiving input from a user specifying a modification of the model;  
translating said input into a command specifying the portion of the model to be modified, and the modification to be made;  
modifying said model in accordance with said command; and

transmitting said command via a network to other CAD/CAM devices connected to said network.

- 9) The CAD/CAM device of Claim 8, further comprising a distributor component, a feature modeler, and a geometric modeler.
- 10) The CAD/CAM device of Claim 8, further comprising a distributor component, and a feature modeler.
- 11) The CAD/CAM device of Claim 9, wherein said geometric modeler employs persistent generic naming.
- 12) The CAD/CAM device of Claim 8, wherein said application program further comprises code for:  
receiving input comprising one or more constraints relating to cell information of the model;  
for each constraint, determining which cells of the model meet the requirement of the constraint; and  
generating a list of cells meeting all of the requirements of the constraints.
- 13) The CAD/CAM apparatus of Claim 12, wherein the application program processes constraints chosen from a group comprising:
  - a) constraints relating to cell dimension;
  - b) constraints relating to the topology of a cell;
  - c) constraints relating to the history of the model evolution;
  - d) constraints relating to specific attributes of a cell; and
  - e) constraints relating to geometrical indications of a cell.
- 14) A CAD system comprised of a plurality of workstations linked together via a communications network, each workstation equipped with program code comprising a distributor component, and a feature modeler, and further

comprising program code for causing said workstation to perform a method comprised of:  
storing data representing a model;  
receiving input from a user specifying a modification of said model;  
translating said input into a command specifying the portion of the model to be modified, and the modification to be made;  
modifying said model in accordance with said command; and  
transmitting said command via said network to other workstations in the system.

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- 15) The CAD system of Claim 14, each workstation further comprising a geometric modeler.
- 16) The CAD system of Claim 15, wherein said geometric modeler employs persistent generic naming.
- 17) The CAD system of Claim 14, wherein said code further comprises code for:  
receiving input comprising one or more constraints relating to cell information of the model;  
for each constraint, determining which cells of the model meet the requirement of the constraint; and  
generating a list of cells meeting all of the requirements of the constraints.
- 18) The CAD system of Claim 17, wherein the code causes the workstation to process constraints chosen from a group comprising:
- a) constraints relating to cell dimension;
  - b) constraints relating to the topology of a cell;
  - c) constraints relating to the history of the model evolution;
  - d) constraints relating to specific attributes of a cell; and
  - e) constraints relating to geometrical indications of a cell.

- 19) Computer executable code stored on a computer readable medium, the code comprising means for causing a CAD system to perform a method for:  
displaying a representation of a model;  
receiving input from a user specifying a modification of the model;  
translating said input into a command specifying the portion of the model to be modified, and the modification to be made;  
modifying said model in accordance with said command; and  
transmitting said command via a network to other CAD/CAM devices.
- 20) Computer executable code stored on a computer readable medium according to Claim 19, the code further comprising means for causing a CAD system to perform a method for:  
receiving from the network a command specifying a portion of the model to be modified, and the modification to be made; and  
modifying said model in accordance with said command.
- 21) Computer executable code stored on a computer readable medium according to Claim 19, the code further comprising means for causing a CAD system to perform a method for:  
receiving input comprising one or more constraints relating to cell information;  
for each constraint, determining which cells of the model meet the requirement of the constraint; and  
generating a list of cells meeting all of the requirements of the constraints.
- 22) Computer executable code stored on a computer readable medium according to claim 21, wherein said constraints used in said method are chosen from a group comprising:
- a) constraints relating to cell dimension;
  - b) constraints relating to the topology of a cell;
  - c) constraints relating to the history of the model evolution;
  - d) constraints relating to specific attributes of a cell; and

- e) constraints relating to geometrical indications of a cell.
- 23) A computer data signal embodied in a digital data stream comprising data representing the physical representation of a model, wherein said data signal is generated by a system operating according to a method comprising:  
receiving at a first workstation input from a user specifying a modification of the model;  
translating said input into a command specifying the portion of the model to be modified, and the modification to be made;  
modifying said model at said first workstation in accordance with said command;  
and  
transmitting said command via a network to other workstations on the network.
- 24) The computer data signal embodied in a digital data stream according to Claim 23, wherein said data signal is generated by a system operating according to a method further comprising:  
processing said command at a second workstation; and  
modifying said model at said second workstation in accordance with said command.
- 25) The computer system operation method of Claim 1, wherein said input comprises one or more constraints relating to cell information, said method further comprising:  
a) selecting the first constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint;  
b) searching the cells of the model and retaining as a subset only the cells that meet the requirement of the first constraint of said input;  
c) selecting the next constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of said next constraint;

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- d) searching the subset of cells and retaining in the subset only the cells that meet the requirement of said next constraint of said input; and
- e) repeating steps c) and d) for each of the remaining constraints in said input.

26) The computer system operation method of claim 26, wherein the constraints are chosen from a group comprising:

- a) constraints relating to cell dimension;
- b) constraints relating to the topology of a cell;
- c) constraints relating to the history of the model evolution;
- d) constraints relating to specific attributes of a cell; and
- e) constraints relating to geometrical indications of a cell.

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